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/JATM/	Z. Wang et al., "Block Precoding for MUI/ISI-Resilient Generalized Multicarrier CDMA with Multirate Capabilities," IEEE Transactions on Communications, Vol. 49, no. 11, pp. 2016-2027, November 2001.					
	F. Ramirez-Mireles et al., "System Performance Analysis of Impulse Radio Modulation," Procedings Radio Wireless Conference, Colorado Springs, CO, pp. 67-70, August 1998.			, ,		
	M. Win et al., "Ultra-Wide Bandwidth Time-Hopping Spread-Spectrum Impulse Radio for Wireless Multiple-Access Communications," IEEE Transactions on Communications, Vol. 48, No. 4, pp. 679-691, April 2000.					
		A. Saleh et al., "A Statistical Model for Indoor Multipath Propagation," IEEE Journal on Selected Areas in Communications, Vol. SAC-5, No. 2, pp. 128-137, February, 1987.				
		B. Hassibi et al., "On the Expected Complexity of Sphere Decoding," Proceedings of the Asilomar Conference on Signals, Systems and Computers, Vol. 2, pp. 1051-1055, 2001.				
	B. Hochwald et al., "Unitary Space-Time Modulation for Multiple-Antenna Communications in Rayleigh Flat Fading," IEEE Transactions on Information Theory, Vol. 46, No. 2, pp. 543-564, March 2000.			ry,		
	Frequency-Select	_	M Impulse Radio for Mocedures of GLOBECO ember 1, 2000.	_	_	
. V	· ·	" IEEE Transaction	npulse Radio with Mul			

/JATM/	C.J. Le Martret et al., "All-Digital PAM Impulse Radio for Multiple-Access Through Frequency-Selective Multipath," Procedure of Sensor Array and Multichannel Signal Processing Workshop, Boston, pp. 77-81, March 2000.
	D. Cassioli et al., "Performance of Low-Complexity Rake Reception in a Realistic UWB Channel," 2002 IEEE International Conference on Communications, pp. 763-767, New York City, N.Y., April 28 – May 2, 2002.
	E. Homier et al., "Rapid Acquisition of Ultra-Wideband Signals in the Dense Multipath Channel," G.E Research Development Center, Technical Information Series, pp. 105-109, January, 2002.
	F. Gini et al., "Frequency Offset and Symbol Timing Recovery in Flat-Fading Channels: A Cyclostationary Approach," IEEE Transactions On Communications, Vol. 46, No. 3, pp. 400-411, March 1998.
	F. Ramirez-Mireles et al., "Multiple Access With Time-Hopping and Block Waveform PPM Modulation," 1998 IEEE International Conference on Communications, Vol. 2 of 3, pp. 775-779, Atlanta, Georgia, June 1998.
	G. Leus et al., "MUI-Free Receiver for a Synchronous DS-CDMA System Based on Block Spreading in the Presence of Frequency-Selective Fading," IEEE Transactions on Signal Processing, Vol. 48, No. 11, pp. 3175-3188, November 2000.
	G.B. Giannakis et al., "AMOUR-Generalized Multicarrier Transceivers for Blind CDMA Regardless of Multipath," IEEE Transactions on Communciations, Vol. 48, No. 12, pp. 2064-2076, December 2000.
	H. Lee et al., "Multipath Characteristics of Impulse Radio Channels," 2000 IEEE 51st Vehicular Technology Conference Proceedings, Tokyo, Japan, pp. 2487-2491, May 15-18, 2000.
	J.D. Choi et al., "Performance of Autocorrelation Receivers for Ultra-Wideband Communications with PPM in Multipath Channels," 2002 IEEE Conference on Ultra Wideband Systems and Technologies, pp. 213-217, Baltimore, MD, USA, May 2002.
] -	J.D. Choi et al., "Performance of Ultra-Wideband Communications With Suboptimal Receivers in Mulipath Channels," IEEE Journal on Selected Areas in Communications, Vol. 20, No. 9, pp. 1754-1766, December 2002.
	J.K. Cavers, "An Analysis of Pilot Symbol Assisted Modulation for Rayleigh Fading Channels," IEEE Transactions On Vehicular Technology, Vol. 40, No. 4, pp. 686-693, November 1991.
/JATM/	J.R. Foerster, "The Effects of Multipath Interference on the Performance of UWB Systems in and Indoor Wireless Channel," IEEE VTS 53 <sup>rd</sup> Vehicular Technology Conference, Vol. 2, pp. 1176-1180, Rhodes, Greece, May 6-9, 2001.

4

JATM/	J.R. Foerster et al., "Ultra-Wideband Technology for Short- or Medium-Range Wireless Communications," Ultra-Wideband Technology for Short- or Medium-Range Wireless Communications, pp. 1-11. April 2001
	K.Siwiak et al., "Ultra-Wide Band Radio: The Emergence of An Important New Technology," IEEE VTS 53 <sup>rd</sup> Vehicular Technology Conference, Vol. 2, pp. 1169-1172, Rhodes, Greece, May 6-9, 2001.
	L. Yang et al., "Multistage Block-Spreading for Impulse Radio Multiple Access Through ISI Channels," IEEE Journal on Selected Areas in Communications, Vol. 20, No. 9, pp. 1767-1777, December 2002.
	L. Yang et al., "Space-Time Coding for Impulse Radio," 2002 IEEE Conference on Ultra Wideband Systems and Technologies, pp. 235-239, Baltimore, MN, May 20-23, 2002.
	L. Yang et al., "Impulse Radio Muliple Access Through ISI Channels With Multi-Stage Block-Spreading" 2002 IEEE Conference on Ultra Wideband Systems and Technologies, pp. 277-281, Baltimore, MD, May 21-23, 2002.
	L. Yang et al., "Optimal Pilot Waveform Assisted Modulation for Ultrawideband Communications," IEEE Transactions on Wireless Communications, Vol. 3, No. 4, pp. 1236-1349, July 2004.
	L. Yang et al., "Non-Data Aided Timing Acquisition of Ultra-Wideband Transmissions Using Cyclostationarity," 2003 IEEE International Conference on Acoustics, Speech and Signal Processing, Hong Kong, Vol. IV of VI, April 6-10, 2003.
	M.Z. Win et al., "Impulse Radio: How it Works," IEEE Communications Letters, Vol. 2, No. 2, pp. 36-38, February 1998.
	M.L. Welborn, "System Considerations for Ultra-Wideband Wireless Networks," 2001 IEEE Radio and Wireless Conference, pp. 5-8, Boston, MA, August 19-22, 2001.
	M.Z. Win et al., "On the Energy Capture of Ultrawide Bandwidth Signals in Dense Multipath Environments," IEEE Communications Letters, Vol. 2, No. 9, pp. 245-247, September 1998.
	M.Z. Win et al., "Ultra-Wide Bandwidth Time-Hopping Spread-Spectrum Impulse Radio- for Wireless Multiple Access Communications," IEEE Transactions on Communications, Vol. 48, No. 4, pp. 679-691, April 2000.
	M.Z. Win et al., "Virtual Path Analysis of Selective Rake Receiver in Dense Multipath Channels," IEEE Communications Letters, Vol. 3, No. 11, pp. 308-310, November 1999.
/JATM/	M.Z. Win et al., "ATM-Based TH-SSMA Network for Multimedia PCS," IEEE Journal on Selected Areas in Communications, Vol. 17, No. 5, pp. 824-836, May 1999.

\*

/JATM/	O. Wintzell et al., "On the Capacity of a Pulse-Position-Hopped CDMA System," IEEE Transactions On Information Theory, Vol. 47, No. 6, pp. 2639-2644, September 2001.
	P. Withington, II et al., "An Impulse Radio Communciations System," Ultra-Wideband, Short-Pulse Electromagnetics, Brooklyn, NY, pp. 113-12, October 1992.
	R. Fleming et al., "Rapid Acquisition for Ultra-Wideband Localizers," 2002 IEEE Conference on Ultra Wideband Systems and Technologies, Balimore, MD, pp. 245-249, May 21-21, 2002.
	R.A. Scholtz, "Mulitple Access with Time-Hopping Impulse Modulation," Communications On The Move, Boston, MA, USA, pp. 447-450, October 1993.
	R.T. Hoctor et al., "An Overview of Delay-Hopped, Transmitted-Reference RF Communications," GE Research and Development Center, Technical Information Series, pp. 1-29, January 2002.
	S. Adireddy et al., "Optimal Placement of Training for Frequency-Selective Block-Fading Channels," IEEE Transactions On Information Theory, Vol. 48, No. 8, pp. 2338-2353, August 2002.
	S. Ohno et al., "Optimal Training and Redundant Precoding for Block Transmissions with Application to Wireless OFDM," IEEE Transactions on Communications, Vol. 50, No. 12, December 2002.
	S. Zhou et al., "Space-Time Coding with Maximum Diversity Gains Over Frequency-Selective Fading Channels," IEEE Signal Processing Letters, Vol. 8, No. 10, pp. 269-272, October 2001.
	S. Zhou et al., "Chip-Interleaved Block-Spread Code Division Multiple Access," IEEE Transactions on Communications, Vol. 50, No. 2, pp. 235-248, February 2002.
	S.M. Alamouti, "A Simple Transmit Diversity Technique for Wireless Communications," IEEE Journal On Selected Areas In Communications, Vol. 16, No. 8, pp. 1451-1458, October 2000: 1998
	S.S. Kolenchery et al., "A Novel Impulse Radio Network for Tactical Wireless Communications," Procedures Milcom Conference, Bedford, MA, October 1998.
	S.S. Kolenchery et al., "Performance of Local Power Control in Peer-to-Peer Impulse Radio Networks With Bursty Traffic," IEEE Global Telecommunications Conference, Vol 2 of 3, Phoenix, AZ, USA, pp. 910-916, November 3-8, 1997.
/JATM/	U. Fincke et al., "Improved Methods For Calculating Vectors of Short Length in a Lattice, Including a Complexity Analysis," Mathematics of Computation, Vol. 44, No. 170, pp. 463-471, April 1985.

/JATM/	· ·	for Ultra-Wideband Communciations," IEEE mications, Vol. 20, No. 9, pp. 1638-1645, December	
		Codes From Orthogonal Designs," IEEE Vol. 45, No. 5, pp. 1456-1467, July 1999.	
		for High Data Rate Wireless Communication: astruction," IEEE Transactions on Information March 1998.	
		f Timing Jitter on the Performance of Impulse ltra Wideband Systems and Technologies, pp. 251-02.	
	X. Chen et al., "Monocycle Shapes for Ultra Wideband System," 2002 IEEE Internatio Symposium on Circuits and Systems, Vol. I of V, pp. I-597 – I-600, Scottsdale, AZ, M 25-29, 2002.		
		nation in Ultra-Wideband Communications," nce on Signals, Systems, and Computers, Pacific	
	Z. Wang et al., "Wireless Multicarrie IEEE Signal Processing Magazine, V	er Communications: Where Fourier Meets Shannon," Vol. 47, No. 3, pp. 1-21, May, 2000.	
/JATM/ Blind CDMA in Unknown Multipa		ange Mutually Orthogonal Flexible Transceivers for a," Procedures of Workshop on Signal Processing on, Annapolis, MD, pp. 42-45, May 9-12, 1999.	
EXAMINE	ER	Date Considered	
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/JATM/	J. Romme et al., " IEEE Conference Inner Harbor, pp.	et al., "A Novel Ultra-Wideband Pulse Design Algorithm," IEEE Communications Vol. 7, No. 5, pp. 219-221, May 2003.  me et al., "On the Power Spectral Density of Time-Hopping Impulse Radio," 2002 Conference on Ultra-Wideband Systems and Technologies, Wyndham Baltimore (arbor, pp. 241-244, May 2002.			iore	
	<ul> <li>M.Z. Win, "Spectral Density of Random UWB Signals," IEEE Communications Letters, Vol. 6, No. 12, pp. 526-528, December 2002.</li> <li>J. Han et al., "A New Ultra-Wideband, Ultra-Short Monocycle Pulse Generator with Reduced Ringing," IEEE Microwave and Wireless Components Letters, Vol. 12, No. 6, pp. 206-208, June 2002.</li> <li>J.S. Lee et al., "New Uniplanar Subnanosecond Monocycle Pulse Generator and Transformer for Time-Domain Microwave Applications," IEEE Transactions on Microwave Theory and Techniques, Vol. 49, No. 6, pp. 1126-1129, June 2001.</li> </ul>			tuers,		
	T.W. Parks et al., Phase," IEEE Tran 1972.	"Chebyshev Appronsactions on Circui	eximation for Nonrecur it Theory, Vol CT-19, I	sive Digital F No. 2, pp. 189	ilters with -194, Mar	Linear ch
/JATM/	Precise Timing,"	2002 IEEE Confere	neration Timing Chip: ence on Ultra-Wideban op. 117-121, May 2002	d Systems and	B Through	n ogies,

Ú,

/JATM/	X. Luo et al., "Designing Optimal Pulse-Shapers for Ultra-Wideband Radios," Journal of Communications and Networks, Vol. 5, No. 4, pp. 344-353, December 2003.
	J.R. Foerster, "The Performance of a Direct-Sequence Spread Ultra-Wideband System in the Presence of Multipath, Narrowband Interference, and Multiuser Interference," 2002 IEEE Conference on Ultra Wideband Systems and Technologies, Wyndham Baltimore Inner Harbor, pp. 87-92, May 2002.
	B.M. Sadler et al., "On the Performance of UWB and DS-Spread Spectrum Communication Systems," 2002 IEEE Conference on Ultra Wideband Systems and Technologies, Wyndham Baltimore Inner Harbor, pp. 289-292, May 2002.
	R.A. Scholtz, "Multiple Access with Time-Hopping Impulse Modulation," Communications on the Move, Conference Record Vol. 2 of 3, MILCOM Conference, Boston, MA, pp. 447-450, 1993.
	L. Yang et al., "Multistage Block-Spreading for Impulse Radio Multiple Access Through ISI Channels," IEEE Journal on Selected Areas in Communications, Vol. 20, No. 9, pp. 1767-1777, December 2002.
	Z. Wang, "Multi-Carrier Ultra-Wideband Multiple-Access with Good Resilience Against Multiuser Interference," 2003 Conference on Information Sciences & Systems, The John Hopkins University, Baltimore, MD, pp. 1-5, March 2003.
	D. Cassioli, et al., "Performance of Low-Complexity Rake Reception in a Realistic UWB Channel," 2002 IEEE International Conference on Communications, New York, NY, pp. 763-767, April 28-May 2, 2002.
	Z. Wang et al., "A Simple and General Parameterization Quantifying Performance in Fading Channels," IEEE Transactions on Communications, Vol. 51, No. 8, pp. 1389-1398, August 2003.
	L. Yang et al., "Analog Space-Time Coding for Multiantenna Ultra-Wideband Transmissions," IEEE Transactions on Communications, Vol. 52, No. 3, pp. 507-517, March 2004.
	I. Bergel et al., "Narrow-Band Interference Suppression in Time-Hopping Impulse-Radio Systems," 2002 IEEE Conference on Ultra Wideband Systems and Technologies, Wyndham Baltimore Inner Harbor, pp. 303-307, May 2002.
	L. Yang et al., "Unification of Ultra-Wideband Multiple Access Schemes and Comparison in the Presence of Interference," The Thirty-Seventh Asilomar Conference on Signals, Systems & Computers, Pacific Grove, CA, pp. 1239-1243, November 2003.
/JATM/	G. Durisi, et al., "Performance of TH and DS UWB Multiaccess Systems in Presence of Multipath Channel and Narrowband Interference," Procedure of International Workshop on Ultra Wideband Systems, Oulu, Finland, 5 pages, June 2003.

 $\sqrt{t}$ 

/JATM/		ng for OFDM Over Fading Wireless Channels," neory, Vol. 49, No. 3, pp. 707-720, March 2003.		
		ne Signal Processing, 2 <sup>nd</sup> Edition, Prentice Hall, as of Fir Filters," pgs. 486-511, 1999.		
	FCC Report and Order, In the Matter Regarding Ultra-Wideband Trasmiss	of Revision of Part 15 of the Commission's Rules ion Systems, FCC 02-48, pp. 7434-7553, April 2002.		
	IEEE P802.15 Working Group for WPAN, Channel Modeling Sub-Committee Report Final, IEEE 802.15-02/368r5-SG3a, pp. 1-40, November 2002.			
		igital-Carrier Multi-Band User Codes for Baseband UWB Multiple of Communications and Networks, Vol. 5, No. 4, pp. 374-385,		
	M. Hamalainen et al., 'On the UWB System Coexistence With GSM900, UMTS/WCDMA, and GPS," IEEE Journal on Selected Areas in Communications, Vol. 20, No. 9, pp. 1712-1721, December 2002.  L. Zhao et al., "Performance of Ultra-Wideband Communications in the Presence of Interference," IEEE Journal on Selected Areas in Communications, Vol. 20, No. 9, pp. 1684-1691, December 2002.			
		Spread Spectrum Versus Direct Sequence Spread and Multipath," IEEE Transactions on 643-655, April 2002.		
/JATM/	P. Withington, "Impulse Radio Overview," Time Domain Corp., pp. 1-7, downloadable from <a href="http://user.it.uu.sc/carle/Notes/UWD.pdf">http://user.it.uu.sc/carle/Notes/UWD.pdf</a> .			
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